REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 56-68 are pending in this application. Claims 30-55 are canceled without prejudice or disclaimer by the present amendment. Support for new Claims 56-68 can be found in the original specification, claims and drawings.[1] No new matter is presented.

In the outstanding Office Action, Claims 30-55 were rejected under 35 U.S.C. §103(a) as unptantable over Markhovsky et al. (U.S. Pub. 2006/0012476, herein Markhovsky) in view of Yamazaki (U.S. Pub. 2003/0236096) and Harbin et al. (U.S. Patent No. 5,701,583, herein Harbin).

In response to the above noted rejection, Applicants respectfully submit that new independent Claim 56 recites novel features clearly not taught or rendered obvious by the applied references.

New Claim 56 is directed to a terminal for a short range wireless mobile communication system. The terminal includes a directional signal wave converter, and a controller configured to determine an optimum beam and to adjust the directional signal-wave converter to transmit/receive an information-carrying signal wave by the optimum beam. The controller is also configured to detect whether a distance between the terminal and a further terminal falls short of a predefined distance value.

When the distance falls short of the predefined distance value, the controller determines a beamwidth so that the beamwidth is increased to a fixed beamwidth value; determines a set of allowed beam directions to comprise a unique beam direction; and determines the optimum beam as a beam having the fixed beamwidth value and the unique beam direction value.

[1] E.g., previously presented Claims 30-37, 48-50 and 53; Figs. 8 and 13; and pp. 15 and 19 of the specification.

When the distance does not fall short of the predefined distance value, the controller determines a beamwidth according to a function which increases when the distance decreases; determines a set of allowed beam directions based on the beamwidth to comprise a plural number of allowed beam directions, the number decreasing when the beamwidth increases; and determines the optimum beam as a beam for which a reported quality is the highest according to a beam-tracking algorithm. A burst is then sequentially transmitted for each particular beam direction among the set of allowed beam directions by a beam having the particular beam direction and the determined beamwidth, and in response thereof, a report including an indication of the quality of the beam is received from the further terminal.

As described in an exemplary embodiment at least at Figs. 8 and 13, and their corresponding description, the claimed configuration adjusts the beamwidth of a transmitted beam based on the distance between the two terminals.

The outstanding Office Action rejection the previously pending claims under 35 U.S.C. §103(a) as unpatentable over Markhovsky in view of Yamazaki and Harbin. The Office Action cites the combination of Markhovsky and Yamazaki as disclosing Applicants' invention with the exception of "control means... adapted to control the half power beam width (HPBW) of the directional characteristics." In an attempt to remedy this deficiency, the Office Action relies on Harbin and states that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the cited references to arrive at Applicants' claims. Applicants respectfully submit that new independent Claim 56 recites novel features clearly not taught or rendered obvious by the applied references, and one of ordinary skill in the art would not be motivated to combine the cited references.

More specifically, Applicants respectfully submit that the applied references, neither alone, nor in combination, teach or suggest controlling the beam width of a directional beam depending on the distance between two terminals, as recited in new independent Claim 56.

In rejecting the features directed to controlling the HPBW, the Office Action relies on col. 4, ll. 36-42 of Harbin. This cited portion of Harbin describes that the directional pattern of the base station 12 can include a HPBW in the azimuthal plane of less than 30° and in the elevation plane of less than 30°. More particularly, the directional pattern may comprise a half power beam width in the azimuthal plane of less than 6° and in the elevation plane of less than 8°. Thus, Harbin does appear to describe that the width of the beam transmitted from the base station can be controlled, but fails to teach or suggest that such control is performed according to a distance between terminals.

In contrast, col. 13, ll. 1-16 of Harbin describes that for receiving microwave signals in a frequency band such as 2.4 GHz, the antenna can be configured to have a 3 dB (1/2 power) beam width of about 5.7° in the elevation plane and about 7.7° in the azimuth plane at a position broadside to the antenna. Thus, Harbin clearly describes that that the beam width configuration is based not on the distance between the base station and a mobile station, but on the frequency of the transmitted signal.

Further, as described at col. 13, ll. 17-25, Harbin's system may also be considered as a replacement for an omnidirectional receiving system when three beams of 120° azimuthal range are combined. Thus, this system is already capable of providing a directional beam and an omnidirectional beam, and since the combination of Markhovsky and Yamazaki, as asserted in the outstanding Office Action, already describe a directional beam and an omnidirectional beam, it would not have been obvious to one of ordinary skill in the art at the time of the invention to combine Markhovsky and Yamazaki with Harbin.

Also, the omnidirectional beam of three 120° beams indicate that Harbin's system is not capable to control the Half Power Beam Width in relation to distance. Otherwise, no three 120° beams would be required.

The Office Action also cites Markhovsky as disclosing the feature of determining position information. Markhovsky, however, as admitted in the outstanding Office Action, fails to teach or suggest that the process of determining the position of a terminal is used to control the beam width, whatsoever.

Thus, Applicants respectfully submit that Markhovsky, Yamazaki and Harbin, neither alone, nor in combination, teach or suggest the process of controlling the beamwidth of a transmitted signal based on the distance between terminals, much less the more detailed aspects of such a control procedure, as recited in new independent Claim 56.

Accordingly, it is respectfully submitted that independent Claim 56 and each of the claims depending therefrom patentably distinguish over Markhovsky, Yamazaki and Harbin, either alone or in combination.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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